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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,637	07/31/2001	Hiroshi Hatano	32577202630	1581

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EXAMINER

LEE, PATRICK J

ART UNIT PAPER NUMBER

2878

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,637

Applicant(s)

HATANO ET AL.

Examiner

Patrick J. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 and 32-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-24, 26-28 and 32-59 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This action is in response to amendment filed May 1st, 2003.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Mitsuoka et al 6,528,780.

Mitsuoka et al disclose an optical lens for a microscope or an optical memory head comprising of a parabolic mirror (10), a mirror (11), a light transmission member (12), and a taper portion of the light transmission member (12).

With respect to claim 1, parabolic mirror (10) serves as a first reflective surface produced by rotating a parabola and mirror (11) serves as a second reflective surface part of a plane perpendicular to a line segment connecting the focus off the parabola and the vertex of the parabola. Light enters the light transmission member (12) from the side of the second reflective surface (11) and is incident on parabolic mirror (10). The light then reflects to the second reflective surface (11) and then is focused to an

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aperture (3) at the boundary of the taper portion (2) of the light transmission member (12).

With respect to claim 2, the surface on which the light is incident is illustrated to be a flat surface perpendicular to an incident direction of light.

With respect to claim 3, the surface of light transmission member (12) is adjacent to a silicon substrate (1), which serves as a mask to form a minute opening as the aperture (3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsuoka et al 6,528,780.

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With respect to claim 4, Mitsuoka et al disclose that the aperture (3) has a diameter of 50 nm in order to generate a near field. To make the aperture have a diameter not greater than the wavelength of light is known and a mere matter of obvious design choice as doing so would allow for proper focusing of the light and increase the intensity of the beam exiting the lens system.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al 6,266,315 in view of Mitsuoka et al 6,528,780.

With respect to claim 25, Lee et al disclose an optical system for reading data from an optical disk. The system comprises of a laser (81), an optical system (85A), a beam splitter (83) coupled with a mirror (84) and lens (82), a detector (88), and a scanning mechanism comprising of a swing arm (89) and a swing arm actuator (90). Beam splitter (83), lens (82), and mirror (84) serve as an optical system to direct light emitted from laser (81) to the optical system (85A). However, Lee et al do not disclose a mirror device with a first parabolic surface. Such is known as Mitsuoka et al disclose near field optical device with a first parabolic mirror (10) and a second mirror (11). To modify the teachings of Lee et al in view of Mitsuoka et al would have been obvious as doing so would allow for concentration of light onto an optical medium. Near field optical devices are known for localizing light onto the surface of objects. This aspect makes it desirable for use in the recording of information onto a medium.

Allowable Subject Matter

8. Claims 5-24, 26-28, & 32-59 are allowed over the prior art.

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9. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 5, 10, 26, & 27, the lenses with the shape as claimed (conical, parabolic, and annular) are not taught nor suggested by the prior art. As a result, claims 5 & 10 along with dependent claims 6-9 and 11-15 are allowed over the prior art.

With respect to claims 16 & 28, Hill 6,552,852 teaches an optical device in which light passes through a medium comprising of two parts (230, 240). The light passes through a beam splitter (250) as a second reflecting surface and to the first reflecting surface (242). Light reflects from the first reflecting surface (242) and then subsequently reflects off of beam splitter (250) to be focused onto a point (262) formed at the boundary of medium portion (240). However, this reference does not satisfy the date requirement, so independent claims 16 & 28 and dependent claims 17-24 are allowable over the prior art. Oh et al 6,493,156 is similar to Hill 6,552,852 in the sense that they teach the limitations of claims 16 & 28, but do not qualify as prior art under the date.

With respect to claims 32 & 36, Chen et al 6,185,051 disclose an optical focusing device comprising an incident surface (100) as an upper surface formed in upper portion of medium (127) and a side-reflecting surface (110) formed by rotating a parabola. Light (135) reflects off of surface (110) and is focused to a point (162). However, Chen et al do not disclose that the medium has a refractive index of not less

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than $1/\sin \theta$. As a result, independent claims 32 & 36 and dependent claims 33-35 & 59 are allowable over the prior art.

With respect to claim 37 & 56, the use of an incident point for entrance of divergent light is not taught nor suggested by the prior art. As a result, claims 37-40 are allowable over the prior art.

With respect to claims 41 & 57, the use of a reflecting surface with a downwardly protruding convex shape with diverging light entering the medium at a light incident point is not taught nor suggested by the prior art. As a result, independent claims 41 & 57 and dependent claims 42-44 are allowable over the prior art.

With respect to claims 45 & 58, the prior art does not teach divergent light entering the medium from the light incident point and subsequently being reflected off the two reflecting surfaces to be later focused at the light focusing point. As a result, independent claims 45 & 58 and dependent claims 46-55 are allowed over the prior art.

Response to Arguments

10. Applicant's arguments with respect to claims 1-4, 16-25, 28, 32-40, & 56 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (703) 305-3871. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9558 for regular communications and (703) 306-5511 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Patrick J. Lee
Examiner
Art Unit 2878

PJL

June 16, 2003


DAVID PORTA
SUPERVISORY PATENT EXAMINER
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